VENDING APPARATUS FOR DISPENSING ICE CREAMS WITH SELECTED INGREDIENTS

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ABSTRACT
Vending machines for automatic dispensing of ice creams enabling a user to select the ice cream flavors of his liking and optionally select ice cream additives such as fruit pieces, chocolate chips, candies, ice cream dressings, etc.
Fig. 1
Fig. 2

Ice cream additives containers

200

212

210

280

171

275
Make an ice cream selection

Mix N

In stock? NO

Display messages

Accept payment

Drop a cup

Transfer each ice cream flavor to the dispensed cup

Need to add additives?

Transfer each ice cream additive to the dispensed cup

Deliver ice cream

Clean selected mechanism

End

Fig. 3
Start

- Mix N
  - In stock?
    - NO: Display messages
    - YES: Accept payment
      - Drop a cup
      - Transfer ice cream of a certain flavor to the dispensed cup
      - Transfer each ice cream additive to the dispensed cup
      - Blend the ice cream and ice cream additive in the dispensed cup
      - Deliver ice cream

- Mix 1
  - In stock?
    - NO: Display messages
    - YES: Accept payment
      - Transfer ice cream additive to the dispensed cup
      - Blend the ice cream and ice cream additive in the dispensed cup
      - Deliver ice cream

Make an ice cream selection

End

Fig. 4
VENING APPARATUS FOR DISPENSING ICE CREAMS WITH SELECTED INGREDIENTS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit under 35 USC 119(e) from U.S. provisional application 60/929,573 filed Jul. 3, 2007, the disclosure of which is included herein by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to a vending apparatus for selectively dispensing an ice cream, and in particular a vending apparatus for selectively dispensing ice creams and/or ice creams containing selected additives such as fruit pieces, chocolate chips, candies, ice cream dressings, etc.

BACKGROUND AND PRIOR ART

[0003] There are many types of vending machines in the market that provide ice creams, which offer wrapped ice cream cones or ice creams on a stick. But vending machines designated for dispensing ice creams containing selected additives such as fruit pieces, chocolate chips, candies, ice cream dressings, etc., are not yet available.

[0004] One type of vending machines for dispensing ice cream provides a single flavor ice cream, U.S. Pat. No. 6,390,334 given to Kim et al., provides an ice cream vending machine includes a cooling system, a freezing chamber cooled by the cooling system, a canister arranged within the freezing chamber for holding a bend type ice cream, a cup supplying device arranged outside of the freezing chamber, for supplying a cup for holding the bend type ice cream.

[0005] Another type of vending machines for dispensing pre-packed ice cream products, U.S. Pat. No. 6,308,522 given to Jones et al. provides a novelty ice cream product which is manufactured to take on a beaded and free-flowing form. This ice cream product is then shipped and distributed through vending machines capable of maintaining temperatures sufficiently cold to preserve the beaded and free-flowing form of the ice cream product.

[0006] Thus, there is a need for and it would be advantageous to have a vending machine that can provide a user with an ice cream containing selected additives such as fruit pieces, chocolate chips, candies, ice cream dressings, etc.

SUMMARY OF THE INVENTION

[0007] The term “ice cream additives” is used herein to refer to various ingredients that can be added to a produce ice cream, for example, fruit pieces, chocolate chips, candies, ice cream dressings, etc.

[0008] The terms “cup” and “serving cup” are used herein to refer to a cup or ice cream cone or the like for serving the ordered ice cream.

[0009] It is the intention of the present invention to provide a vending machine that can provide a user with an ice cream containing one or more ice cream additives.

[0010] According to the teachings of an embodiment of the present invention there is provided a vending apparatus for dispensing an ice cream containing selected flavors and optionally containing ice cream additives which the user selects, the apparatus including:

- [0011] a) an enclosed housing;
- [0012] b) a mechanism for dispensing a cup;
- [0013] c) at least one compartment containing one or more ice cream flavors;
- [0014] d) a mechanism for scooping selected ice cream flavors and transferring the scooped ice cream to the dispensed cup;
- [0015] e) optionally, a cleaning mechanism for cleaning the scooping mechanism;
- [0016] f) optionally, one or more compartments containing one or more ice cream flavors;
- [0017] g) optionally, a mechanism for scooping selected ice cream flavors and transferring the scooped ice cream to the dispensed cup;
- [0018] h) optionally, a mechanism for collecting waist;
- [0019] i) a compartment where the dispensed cup with the prepared ice cream can picked up by the user;
- [0020] j) optionally, a mechanism for transferring the cup with the prepared ice cream to the serving compartment; and
- [0021] k) a controller for automatically initiate the ice cream preparation in response to a customer’s selection.

[0022] According to the teachings of another embodiment of the present invention there is provided a vending apparatus for dispensing an ice cream containing ice cream additives which the user selects, the apparatus including:

- [0023] a) an enclosed housing;
- [0024] b) a mechanism for dispensing a cup;
- [0025] c) at least one compartment containing one or more ice cream flavors;
- [0026] d) a mechanism for scooping selected ice cream flavors and transferring the scooped ice cream to the dispensed cup;
- [0027] e) optionally, a cleaning mechanism for cleaning the scooping mechanism;
- [0028] f) at least one compartment containing one or more ice cream additives;
- [0029] g) a mechanism for transferring one or more ice cream additives to the serving cup;
- [0030] h) at least one device for blending the ice cream additives with the ice cream;
- [0031] i) optionally, a cleaning mechanism for cleaning one or more elements of the blending device;
- [0032] j) optionally, one or more containers for collecting waist;
- [0033] k) a compartment where the dispensed cup with the prepared ice cream can picked up by the user;
- [0034] l) optionally, a mechanism for transferring the cup with the prepared ice cream to the serving compartment; and
- [0035] m) a controller for automatically initiate the ice cream preparation in response to a customer’s selection.

[0036] The compartments of one or more ice cream additives, contains items selected from the group of ingredients including fresh fruit pieces, dried fruit pieces, chocolate chips, ice cream dressings, candies, waffle crumbs, cookie crumbs, ground nuts, coconut pieces, almond pieces or any other kind of ice cream additive.

[0037] In embodiments of the present invention, an ice cream making apparatus is used instead of or in addition to the compartment.

[0038] In embodiments of the present invention, at least a portion of the compartments of ice cream additives are preferably kept refrigerated.
According to the teachings of embodiments of the present invention there is provided a method for dispensing freshly cut and prepared ice creams from a vending apparatus. An ice cream selecting procedure precedes the ice cream production.

In an ice cream selecting procedure, according to the teachings of embodiments of the present invention, a menu with available ice creams and optionally, ice cream additives is displayed to the user. The user selects items to his liking. If the user selects an item that is not available, a message is displayed to the user, who in turn can make a new selection. After the selection is completed the cost is displayed to the user, who can make the payment. The vending apparatus accepts the payment and initiates the ice cream production. The initiation includes, but not limited to, identifying and selecting the compartments containing selected ice cream additives.

Once the ice cream selecting procedure is complete, the automatic process for producing the selected ice cream is ready to commence, according to the teachings of embodiments of the present invention. A cup is dispensed and placed in a designated location, for example, in the collecting compartment. The mechanism for scooping ice cream reaches each selected compartment containing selected ice cream flavors and transfers the scooped ice cream to the dispensed cup. If no ice cream additives are to be added, the cup is ready to be picked up by the user.

If ice cream additives are to be added to the ice cream, the mechanism for transferring ice cream additives to the serving cup reaches each selected compartment containing selected ice cream additives and transfers a pre-measured amount of the ice cream additive to the dispensed cup. Optionally, the blending mechanism blends the ice cream and the ice cream additive in the dispensed cup. The prepared ice cream is ready.

In embodiments of the present invention, the mechanism for transferring the ice cream additives to the dispensed cup can be a picker, such as a moving arm including a grabbing mechanism.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become fully understood from the detailed description given herein and the accompanying drawings, which are given by way of illustration and example only and thus not limiting of the present invention, and wherein.

FIG. 1 is a schematic side perspective view of a vending apparatus for dispensing selectively prepared ice creams, according to embodiments of the present invention.

FIG. 2 is a schematic side perspective view of a vending apparatus for dispensing selectively prepared ice creams, according to embodiments of the present invention.

FIG. 3 is a schematic flow diagram showing the successive steps taken from purchasing till the delivery of an ice cream, performed on a vending apparatus, according to embodiments of the present invention.

FIG. 4 is a schematic flow diagram showing the successive steps taken from purchasing till the delivery of an ice cream, performed on a vending apparatus having a blender, according to embodiments of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

The present invention provides a vending machine that enables a user to obtain an ice cream with selective flavors, and which optionally contains selected additives.

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided, so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art.

Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. The methods and examples provided herein are illustrative only and not intended to be limiting.

A first embodiment of the invention will now be described with reference to FIG. 1 which is a schematic side perspective view of a vending apparatus 100 for dispensing selectively prepared ice creams, according to embodiments of the present invention.

Vending apparatus 100 includes: a housing 102 which contains:

a) a closed housing 102;

b) a compartment 170 for holding dispensable cups 171;

c) at least one compartment 130 which holds an ice cream with particular flavor;

d) a mechanism 120 for scooping selected ice cream flavors and transferring the scooped ice cream to dispensed cup 171. Mechanism 120 can be any type of mechanism that can scoop a pre-measure amount of ice cream and transfer the scooped ice cream to dispensed cup 171;

e) optionally, a cleaning mechanism for cleaning selected elements of scooping mechanism 120;

f) optionally, a mechanism for collecting waist;

g) a dispensing compartment 178 for the customer to pick cup 171 with the ice cream he selected, when ready; and

h) a control panel 190 for the customer to operate the apparatus, which can be activated from the outside, normally by a customer who pays for the ice cream by coins, credit card, debit card, prepaid card, bank card, or by paper money or other cash.

In embodiments of the present invention, ice cream making apparatus 160 is used instead of or in addition to at least one compartment 130. Apparatus 160 typically makes soft ice cream, and can optionally produce and disperse multiple flavored ice creams 132.

In embodiments of the present invention, vending apparatus 100 also includes:

i) at least one compartment 110 containing one or more ice cream additives; and

j) a mechanism for transferring one or more ice cream additives to serving cup 171.

In embodiments of the present invention, vending apparatus 100 also includes:

k) at least one device 150 for blending the ice cream additives with the ice cream; and

l) optionally, a cleaning mechanism for cleaning one or more elements of blending device 150.

Reference is also made to FIG. 2, which is a schematic side perspective view of a vending apparatus 200 for dispensing selectively prepared ice creams, according to embodiments of the present invention. In embodiments of the present invention, vending apparatus 200 includes a mecha-
nism 275 for conveying cup 171 from one location to another, for example, from a station where the ice cream is prepared to a station where ice cream additives are added, to a station where the ice cream is blended to dispensing station 280. The mechanism can be a conveying belt or any other mechanism.

**FIG. 2** also illustrates another mechanism 210 for transferring ice cream additives to cup 171. Mechanism 210 includes at least one container 212, containing at least one ice cream additive. Mechanism 210 can operatively rotate such that a container 212 containing a selected ice cream additive is positioned above cup 171, and drops a pre measured amount of the selected ice cream additive onto cup 171.

In embodiments of the present invention, container 212 can be stationary, and a conveying mechanism 275 moves cup 171 from one station to another.

In embodiments of the present invention, mechanism 212 for transferring the ice cream additives to dispensed cup 171 can be a picker, such as a moving arm 124 including a grabbing mechanism 122.

The internal space of vending apparatus 100 is at least partially refrigerated to preserve the freshness of the various products and other parts are freezers, for example compartments 130 containing the stored ice cream.

The front and other portions of housing 102 walls can optionally be made of clear material, such as glass, to allow the customer and passers-by to watch the ice cream being prepared.

The process of operating a vending apparatus 100 for dispensing selected ice creams will now be described, with reference to FIG. 3. FIG. 3 is a schematic flow diagram 300 showing the successive steps taken, from purchasing till the delivery of an ice cream selection, performed on vending apparatus 100, according to embodiments of the present invention.

To operate vending apparatus 100, available ice cream flavors and optionally ice cream additives, are displayed on a massage screen in payment control box 190, in steps 320 and 322. A user starts process 330 of making an ice cream in some preprocess steps, selecting ice cream flavors and optionally ice cream additives. The preprocess steps are finalized when the user makes a payment in step 340. Process 300 then proceeds automatically to produce the selected ice cream. Process 300 includes the following steps:

**Preprocess Steps:**

**Step 310**—The user selects flavors from available ice cream flavors and optionally ice cream additives, via payment control box 190. All options are displayed on a massage screen in payment control box 190, in steps 320 and 322.

**Step 321/322**—If a user selection is not in stock, an appropriate message is displayed in step 330 and the user can return to step 310 to make a new selection.

**Step 340**—when the ice cream flavors and/or additives are established, the user makes the payment via control box 190 or pushes a start button or any other mechanism a like.

**Process Steps:**

**Step 350**—a single cup 171 drops onto a collecting location 178 where the ice cream is prepared.

**Step 360**—each ice cream flavor selected in step 310 is scooped by mechanism 120 and transferred directly to dispensed cup 171. In embodiments of the present invention selected ice cream flavors 132 are dispensed from an ice cream making apparatus 160.

**Step 370**—optionally, vending apparatus 100, checks if need to add ice cream additives, pre-selected by the user.

**Step 380**—if ice cream additives were selected, a mechanism for transferring ice cream additives is activated and transfers the selected ice cream additives to serving cup 171.

**Step 390**—cup 171 containing the ice cream being prepared is picked up by the user from dispensing compartment 180 at location 178.

Optionally, cup 171 can be transferred to compartment 180 by a conveying mechanism 275, which can be a conveying belt or any other transfer mechanism.

The client may need to open a door in order to reach into compartment 178 or 180 to reach into the compartment and pick up cup 171 with the prepared ice cream.

**Step 395**—optionally, elements of mechanism 120 can be cleaned by some cleaning mechanism. A cleaning mechanism may also clean elements of the ice cream additives transfer mechanism.

**Step 399**—the vending apparatus 100 enters a wait state, ready for the next ice cream producing cycle.

The process of operating a vending apparatus 100 for dispensing selected ice creams will now be described, with reference to FIG. 4. FIG. 4 is a schematic flow diagram 400 showing the successive steps taken, from purchasing till the delivery of an ice cream, performed on vending apparatus 100, according to embodiments of the present invention.

To operate vending apparatus 100, available ice cream flavors and optionally ice cream additives, are displayed on a massage screen in payment control box 190, in steps 420 and 422. A user starts process 430 of making an ice cream in some preprocess steps, selecting ice cream flavors and optionally ice cream additives. The preprocess steps are finalized when the user makes a payment in step 440. Process 400 then proceeds automatically to produce the selected ice cream. Process 400 includes the following steps:

**Preprocess Steps:**

**Step 410**—The user selects flavors from available ice cream flavors and optionally ice cream additives, via payment control box 190. All options are displayed on a massage screen in payment control box 190, in steps 420 and 422.

**Step 421/423**—If a user selection is not in stock, an appropriate message is displayed in step 430 and the user can return to step 410 to make a new selection.

**Step 440**—when the ice cream flavors and/or additives are established, the user makes the payment via control box 190 or pushes a start button or any other mechanism a like.

**Process Steps:**

**Step 405**—Once payment is accepted by vending apparatus 100, an automatic cycle of producing the ice cream ordered, begins.
[0096] Step 450—a single cup 171 drops onto a collecting location 178 where the ice cream is prepared.

[0097] Step 460—an ice cream flavor selected in step 410 is scooped by mechanism 120 and transferred directly to dispensed cup 171. In embodiments of the present invention selected ice cream flavors 132 are dispensed from an ice cream making apparatus 160 into cup 171.

[0098] Step 470—a mechanism for transferring ice cream additives is activated and transfers the selected ice cream additives to serving cup 171.

[0099] Step 480—blender 150 blends the ice cream additives with the ice cream.

[0100] Step 490—cup 171 containing the ice cream being prepared is picked up by the user from dispensing compartment 180 at location 178.

[0101] Optionally, cup 171 can be transferred to compartment 180 by a conveying mechanism 275, which can be a conveying belt or any other transfer mechanism.

[0102] The client may need to open a door in order to reach into compartment 178 or 180 to reach into the compartment and pick up cup 171 with the prepared ice cream.

[0103] Step 495—optionally, elements of mechanism 120 can be cleaned by some cleaning mechanism. A cleaning mechanism may also clean elements of the ice cream additives transfer mechanism. A cleaning mechanism may also clean elements of blender 150.

[0104] Step 499—the vending apparatus 100 enters a wait state, ready for the next ice cream producing cycle.

[0105] In embodiments of the present invention, mechanism 120 for scooping the ice cream and the mechanism for transferring the ice cream additives are the same mechanism.

**EXAMPLE**

[0106] A client selects a strawberry flavored ice cream containing banana pieces and coconut pieces. A cup 171 is dropped at location 178. Ice making machine 160 drops strawberry flavored ice cream into cup 171. Transfer mechanism 120 picks up a measured quantity of banana pieces which are transferred directly to cup 171. Transfer mechanism 120 picks up a measured quantity of coconut pieces which are transferred directly to cup 171. Blending machine 150 blends the strawberry flavored ice cream and the banana and coconut pieces, inside cup 171. The freshly ordered ice cream is now ready inside cup 171.

[0107] In embodiments of the present invention, compartments 130 contain various flavors of frozen yogurt.

[0108] In embodiments of the present invention, ice cream making machine 160 is replaced by a frozen yogurt making machine.

[0109] The invention being thus described in terms of the embodiments and examples, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

What is claimed is:

1. A vending apparatus for dispensing selected ice creams, the vending apparatus comprising:
   a) an enclosed housing;
   b) a mechanism for dispensing a cup for serving said selected ice cream;
   c) at least one ice cream compartment, wherein said compartment holds an ice cream with particular flavor;
   d) a scooping mechanism for scooping selected ice cream flavors and transferring the scooped ice cream to said dispensed cup;
   e) a pickup compartment where the dispensed cup with the selected ice cream flavors can picked up by the user; and
   f) a controller for accepting the ice cream selection of a customer and automatically initiating the preparation of said ice cream selection.

2. The vending apparatus of claim 1, wherein one or more of said compartments contain frozen yogurt.

3. The vending apparatus of claim 1 further comprising one or more compartments containing at least one ice cream additive.

4. The vending apparatus of claim 3, wherein said ice cream additives are selected from the group of ingredients including fresh fruit pieces, dried fruit pieces, chocolate chips, ice cream dressings, candies, waffle crumbs, cookie crumbs, ground nuts, coconut pieces, almond pieces or any other kind of ice cream additive.

5. The vending apparatus of claim 3 further comprising a mechanism for transferring said at least one ice cream additive to said dispensed cup.

6. The vending apparatus of claim 5, wherein said mechanism for transferring said at least one ice cream additive to said dispensed cup is the scooping mechanism.

7. The vending apparatus of claim 3, further comprising a blending mechanism for blending said selected ice cream flavors with said ice cream additives.

8. The vending apparatus of claim 7, further comprising a cleaning mechanism for cleaning said blending mechanism.

9. The vending apparatus of claim 1, further comprising a mechanism for moving said dispensed cup.

10. The vending apparatus of claim 9, wherein said mechanism for moving said dispensed cup is a moving belt.

11. The vending apparatus of claim 1, wherein said scooping mechanism is a picker.

12. The vending apparatus of claim 1 further an ice making mechanism for making fresh ice cream or frozen yogurt.

13. The vending apparatus of claim 1, wherein at least a portion of said housing is a refrigerator.

14. The vending apparatus of claim 1, wherein at least a portion of said housing is a freezer.

15. The vending apparatus of claim 1, wherein at least a portion of said housing is made of clear material to allow the customer and passers-by to watch the ice cream selection being prepared.

16. An automatic method for dispensing selected ice creams, the method comprising the steps of:
   a) providing a vending apparatus having:
      i. an enclosed housing;
      ii. a mechanism for dispensing a cup for serving said selected ice cream;
      iii. at least one ice cream compartment, wherein said compartment holds an ice cream with particular flavor;
      iv. a scooping mechanism for scooping selected ice cream flavors and transferring the scooped ice cream to said dispensed cup;
      v. a pickup compartment where the dispensed cup with the selected ice cream flavors can picked up by the user; and
vi. a controller for accepting the ice cream selection of a customer and automatically initiating the preparation of said ice cream selection;
b) selecting one or more items from available ice cream flavors and ice cream additives using said controller, thereby forming an ice cream selection;
c) dispensing a cup onto a location where said ice cream selection is prepared;
d) scooping the ice cream flavors of said ice cream selection and said ice cream additives;
e) transferring said scooped ice cream flavors and said ice cream additives into said dispensed cup; and
f) transferring said dispensed cup with said with said ice cream selection to said pickup compartment.
17. The method of claim 16 further comprises the step of:
g) providing at least one ice cream compartment, wherein said compartment holds one or more ice cream additives;
h) selecting one or more ice cream additives using said controller;
i) scooping said ice cream additives; and
j) transferring said scooped ice cream additives into said dispensed cup.
18. The method of claim 17, wherein said ice cream additives are selected from the group of ingredients including fresh fruit pieces, dried fruit pieces, chocolate chips, ice cream dressings, candies, waffle crumbs, cookie crumbs, ground nuts, coconut pieces, almond pieces or any other kind of ice cream additive.
19. The method of claim 17, further comprising the step of:
k) blending ice cream flavors and said ice cream additives.
20. The method of claim 16, further comprising the step of making fresh ice cream or frozen yogurt.